

Farm Operations Cost Guide

• Custom Rates Survey Summary • Farm Machinery Cost Guide • Calculating Farm Machinery Costs

Alberta

AGRICULTURE, FOOD AND
RURAL DEVELOPMENT
Statistics and Data Development Unit
Agricultural Business Management Branch

Published by:

Alberta Agriculture, Food and Rural Development
Publishing Branch
7000 - 113 Street, Edmonton, Alberta
Canada T6H 5T6

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Electronic Publishing Production:
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Graphic Designer: John Gillmore

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and Rural Development.

ISSN 1201-9313

Printed in Canada

Contents

- also visit our online Machinery Cost Calculator at www.agric.gov.ab.ca/machcost

Introduction	1	Baling, stacking and hauling small square	8
Other Information Sources	1	Cutting, baling, stacking and hauling small square	8
Custom Rates Survey Summary	2	Baling - medium square	8
Objective	2	Baling - large square	8
How to Use Custom Rates Information	3	Baling - small round	8
Tillage		- medium round	8
Plowing - crop and stubble	4	Baling - large round	8
- hay and pasture	4	Stacking and hauling large round	9
Discing - crop and stubble	4	Baling, stacking and hauling large round	9
- hay and pasture	4	Hay hauling - large round	9
Rototilling - hay and pasture	4	Silage	
Cultivating	4	Cutting silage - swathing	9
Harrowing and packing	4	Chopping silage	9
Seeding		Hauling silage	10
Seeding - air seeder/airdrill	4	Packing silage	10
Seeding - press drill/hoe drill	5	Chopping and hauling silage	10
Seeding - floater truck	5	Swathing, chopping and hauling silage	10
Seeding - aerial	5	Swathing, chopping, hauling and packing	10
Seeding - no-till drill	5	Silage bagging	10
Fertilizer Application		Silage chopping, hauling and bagging	10
Liquid or granular fertilizer application - land	5	Land Clearing and Breaking	
Granular fertilizer application - aerial	5	Brushing and piling or repiling	11
Granular fertilizer application - land	5	Ripping or sub-soiling	11
Anhydrous fertilizer application	5	Root raking	11
Herbicide Application		Rock picking	11
Granular herbicide application - land	6	Discing	11
Liquid or granular herbicide application - land	6	Plowing	11
Liquid herbicide application - land	6	Rototilling	11
Liquid herbicide application - aerial	6	Dugout construction, drainage, land levelling	11
Grain Harvesting		Machinery Rental	
Swathing	6	Anhydrous ammonia applicator - pull-type	12
Combining - straight cut header and pickup header	6	Liquid fertilizer applicator - pull-type	12
Combining and hauling to bin	7	Granular fertilizer applicator - pull-type	12
Grain drying	7	Granular herbicide applicator - pull-type	12
Grain Hauling		Soil Testing	
Grain hauling - less than 20 miles	7	Soil testing	12
Grain hauling - 21 to 50 miles	7	Grain Processing	
Grain hauling - 51 to 100 miles	7	Grinding	13
Grain hauling - 101 to 200 miles	7	Dry rolling	13
Grain hauling - over 200 miles	7	Steam rolling	13
Haying		Pelleting	13
Cutting and conditioning hay - mower conditioner	8	Processed grain delivery - 7 to 13 tonne load	13
Baling - small square	8	Livestock Feeding	
Stacking and hauling small square	8	Feeding and backgrounding calves	14
		Finishing calves	14
		Finishing yearlings	14
		Overwintering cows	14

Livestock Hauling

Possum belly liner	15
Straight liner, body job and gooseneck	15
Other livestock (horses, sheep, etc.)	15

Corral Cleaning

Corral cleaning	16
-----------------------	----

Fencing

Barbed wire fence construction	16
High tensile wire fence construction	16
Post pounding	16
Barbed wire fence removal	16

Land Leasing

Cash rent - cropland	17
Length of lease - cropland	17
Type of lease - cropland	17
Cropshare rental - cropland	18
Cash rent - private pasture	18
Crown land	18

Average Alberta Farm Input Prices

Agricultural Input Prices	19
Building supplies	19
Machinery repairs	19
Crop supplies	19
Feeds	20
Livestock supplies	20
Fuel and oil	20
Other	20

Farm Machinery Costs

How to Use the Farm Machinery Cost Guide	21
Tractors - 2 wheel drive	22
Tractors - 4 wheel drive	23
Cultivation equipment	24
Cultivation/seeding/spraying equipment	25
Forage equipment	26
Baling equipment	27
Combines	28
Grinders, mixers and dryers	29
Farm trucks	30
Rock pickers	30
Grain vacuums	30

Calculating Farm Machinery Costs

Preface	31
Machinery Cost Terms	32
Worked examples of:	
Worksheet Formulas	33
Machinery Cost Worksheet	34
Machinery Cost Summary	35
Worksheet Formulas	36
Machinery Cost Worksheet	37
Machinery Cost Summary	38
Fuel Consumption for Varying Tractor Horsepower	39
Machinery Costs Assumption Guide	40

Introduction

Since 1975, the Agricultural Business Management Branch of Alberta Agriculture, Food and Rural Development has annually surveyed custom rates, rental rates and the new cost of farm machinery to provide information to farmers and custom operators.

The first part of this publication presents a summary of custom work and rental rates during 1999. These rates are only intended as a guide. **They are not to be interpreted as the rates you must charge or pay.** The surveys were conducted by Maureen Wenger of the Statistics and Data Unit from February 1999 through December 1999 and summarized by David Thacker, who is associated with the Agricultural Business Management Branch.

The department gratefully acknowledges the contribution of the farmers and custom operators who willingly co-operated by providing information about their custom and rental rates.

Again for 2000, a listing of prices for some common farm inputs is included. These prices are collected throughout the year by Wild Rose Ag Producers (formerly Unifarm) and the Statistics and Data Development Unit of Alberta Agriculture, Food and Rural Development.

Part three of this publication is a farm machinery cost guide, which provides information on the cost of owning and operating farm machinery. Technical information such as current machinery prices, repair rates, performance, capacity, fuel consumption and fuel price are used to calculate fixed and variable costs. The cost calculations are intended to be used as approximate costs based on new machinery prices as of December 1999.

This year, the Years of Life and Salvage Value have been changed to more accurately indicate what was happening in the marketplace. We feel this adjustment will make our calculation more accurate, but we are still using average numbers, so we recommend that you use your specific information and the worksheets or the online Machinery Cost Calculator wherever possible. This work was done by Dann Mattson of the Agricultural Business Management Branch in Olds.

If you require further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development district office or Farm Management Specialist. Locations and telephone numbers for Farm Management Specialists are listed on page 31.

Other Information Sources

Know Your Farm Machinery Costs, Alberta Agriculture, Food and Rural Development, Agdex 825-6, March 1989

Farm Machinery Custom and Rental Rate Guide, 1998
Saskatchewan Agriculture and Food

Farm Machinery Rental and Custom Rate Guide, 1998
Manitoba Agriculture Farm Management

The online Machinery Cost Calculator at:
<http://www.agric.gov.ab.ca/machcost>

Try the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>

Custom Rates Survey Summary

Objective

The specific objective of this survey summary is to organize and report 1999 custom rates for certain custom operations on the farm. No effort is made to evaluate the fairness of reported rates. **The goal is to report what is being charged, not what should be charged.** Because many of the surveys were conducted in 1999, higher costs or other market factors may have resulted in higher custom rates by the time of publication.

Sample size

Sample size is often small, and thus, reported rates should only be used as a general indication of rates being charged for various custom operations in Alberta.

Custom rates in this publication are not to be interpreted as recommended rates. Rates charged by individual custom operations should still be evaluated on their own merit.

Users of custom rates information

Farmers may find custom rates useful as a guide for machinery management, budgeting and financial planning for credit needs. Also, custom rates can be used as a guide in negotiating settlements for work performed for neighbors or others. Lenders, educators, government institutions and others doing budgeting or planning analysis may also find custom rates helpful in their work. Custom operators can use these guides to compare their own rate with the market rate in a certain area.

Understanding the tables

Custom rates for various operations in Alberta are presented on pages 4 to 18. The tables are itemized under type of:

- Operation surveyed,
- Location where rates apply,
- Most Common Rates charged in 1997,
- Range of Rates charged in 1998, and
- Most Common Rates charged in 1998.

Under the heading **Location**, three regions, south, central and north are identified. When survey reports were insufficient for regional comparisons, the location is identified as Alberta. The map on page 3 outlines the regional boundaries.

Custom rates in 1999 for the various operations are shown as Range-1999 and Most Common-1999. The rates quoted most often by custom operators are under the heading Most Common-1999. Variations in rates from lowest to highest are under the heading Range-1998. The reason for these ranges is due to many factors, some of which are listed below.

Factors contributing to lower rates:

- neighborly work exchange
- location of job in relation to home base of custom operator
- custom operator's desire to cover variable costs but not necessarily all fixed costs
- use of older equipment that does not reflect current investment cost and/or has a lower capacity
- services such as labor, meals, fuel, supervision, transportation or other convenience services being provided to the custom operator by the farmer
- the size of job

Factors contributing to higher rates:

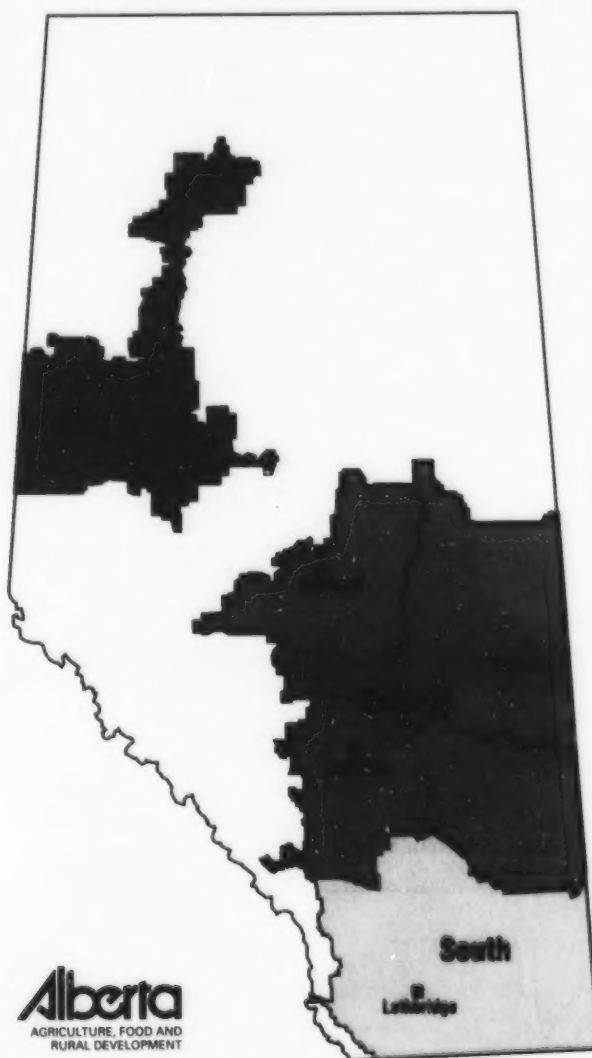
- full-time custom operators who are covering all costs
- charging what the market will bear
- tough jobs requiring extra power, repairs, fuel or time
- field conditions such as rocks, rough terrain, obstructions or high yield crops
- small size jobs
- higher capacity machines

How to use custom rates information

Rates quoted in this publication for the various custom operations are expressed in numerous ways (per hour, ton, tonne, bale, acres, etc.). Before comparing the various custom operations, always choose the appropriate basis on which to compare. For example, grain harvesting may require a per acre cost as compared to corral cleaning where a per hour rate is more appropriate. When custom rates are given in dollars per hour, it is advisable to convert to a physical unit cost (bushels, tonnes, acres) appropriate

to that operation. A low cost per hour can be a very high cost per acre, tonne, etc.

Because custom rates quoted in this publication may not suit all custom operators and those hiring custom work, you should calculate your own custom costs. For more information on how to calculate your own cost, consult Sections Two and Three of this book or use the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>.



Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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Tillage

Plowing – crop and stubble (also see “land clearing and breaking” on page 11)	Alberta	\$10/ac *	\$8/ac *	\$8/ac *
– hay and pasture	Alberta	\$12 - 25/ac	\$10 - 24/ac \$95 - 125/hr	\$10 - 24/ac \$95 - 125/hr

Total reports 6; Surveyed November 1999

Discing – crop and stubble	Alberta	\$5 - 8/ac \$60/hr - 70/hr	\$5 - 30/ac \$110/hr*	\$5 - 7.50/ac \$110/hr *
– hay and pasture	Alberta	\$10 - 12/ac \$70 - 110/hr	\$9 - 30/ac \$60 - 145/hr	\$10 - 17/ac \$75 - 110/hr

Total reports 27; Surveyed November 1999

Rototilling – hay and pasture	Alberta	\$83 - 120/hr \$78 - 82/hr *	\$90 - 220/hr \$78 - 82/hr *	\$90 - 120/hr \$78 - 82/hr *
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Total reports 7; Surveyed November 1999

Cultivating	Alberta	\$4.50 - 6.00/ac \$70/hr	\$5 - 8/ac \$45 - 85/hr	\$6/ac \$50 - 85/hr
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Total reports 15; Surveyed November 1999

Harrowing	Alberta	— —	\$3 - 3.50/ac \$50 - 75/hr	\$3 - 3.50/ac \$50 - 75/hr
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Total reports 4; Surveyed November 1999

Harrowing and packing	Alberta	\$2.20 - 4.50/ac	\$2.50/ac	\$2.50/ac
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Total reports 2; Surveyed November 1999

See cost calculations page 24 and 25

Seeding

Seeding – air seeder/airdrill	South	\$7 - 10/ac	\$6 - 20/ac	\$8 - 15/ac
	Central	\$7 - 10/ac	\$7 - 16/ac	\$8 - 15/ac
	North	\$7 - 10/ac	\$7.50 - 15.00/ac	\$7.50 - 15.00/ac

Note: higher costs for direct seeding versus conventional seeding

Total reports 84; Surveyed June & November 1999

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
Seeding – press drill/hoe drill	Alberta	\$5 - 7/ac	\$4 - 13/ac	\$6 - 12/ac
Note: higher costs when granular fertilizer applied with seeding operation				
Total reports 18; Surveyed June & November 1999				
Seeding – floater truck	South	\$4 - 5/ac	\$4 - 6/ac	\$4.00 - 4.50/ac
	Central	\$4 - 5/ac	\$3.50 - 7.00/ac	\$4 - 6/ac
	North	\$4 - 5/ac	\$4.00 - 4.50/ac	\$4.00 - 4.50/ac
Total reports 94; Surveyed June & November 1999				
Seeding – aerial				
Highest rates for heavier seeding rates	Alberta	\$4.25 - 6.00/ac	\$4.50 - 5.00/ac	\$5/ac
Total reports 11; Surveyed June & November 1999				
Seeding – no-till drill	Alberta	\$10 - 15/ac	\$10 - 16/ac	\$12 - 15/ac
Total reports 8; Surveyed June & November 1999				
See cost calculations page 25				

Fertilizer Application

Liquid or granular fertilizer application	South	\$4.00 - 4.50/ac	\$3.25 - 5.50/ac	\$3.75 - 4.50/ac
	Central	\$4.00 - 4.50/ac	\$3.50 - 5.50/ac	\$3.75 - 4.50/ac
	North	\$3.50 - 4.00/ac	\$3.50 - 4.50/ac	\$4.00 - 4.50/ac
Total reports 181; Surveyed June & November 1999				
Granular fertilizer application				
Fixed-wing aerial	Alberta	\$5.00 - 5.50/ac	\$5/ac	\$5/ac
Total reports 5; Surveyed June & November 1999				
Granular fertilizer application				
Truck mount	Alberta	\$3.00 - 3.50/ac	\$2.50 - 5.00/ac	\$2.50 - 5.00/ac
Total reports 5; Surveyed June & November 1999				
Anhydrous fertilizer application				
Cultivator with cold flow kit	Alberta	\$5 - 10/ac	\$5.50 - 10.00/ac	\$6.50 - 9.50/ac
Total reports 12; Surveyed June & November 1999				

These are survey results only – not recommended rates.
NOTE: * Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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Herbicide Application

Granular herbicide application

Floater truck	Alberta	\$4.00 - 4.75/ac	\$3.50 - 5.50/ac	\$4 - 5/ac
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Total reports 59; Surveyed June & November 1999

Liquid or granular herbicide application

Truck mount	Alberta	\$2 - 4/ac	\$2.25 - 4.00/ac	\$2.50 - 4.00/ac
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Total reports 14; Surveyed June & November 1999

Liquid herbicide application

High clearance	South	\$4 - 6/ac	\$3.50 - 8.00/ac	\$4 - 6/ac
	Central	\$4 - 5/ac	\$3.25 - 7.00/ac	\$4.00 - 5.50/ac
	North	\$4 - 5/ac	\$4 - 5/ac	\$4 - 5/ac

Total reports 213; Surveyed June & November 1999

Liquid herbicide application

Fixed-wing aerial (highest rates for more water used)	South	\$4 - 6/ac	\$3.75 - 7.50/ac	\$4.00 - 5.50/ac
	Central	\$4 - 6/ac	\$4.00 - 6.50/ac	\$4.50 - 6.00/ac
	North	\$4 - 6/ac	\$4.00 - 5.50/ac	\$4.00 - 5.50/ac

Total reports 92; Surveyed June & November 1999

See cost calculation spraying page 25

Grain Harvesting

Swathing	Alberta	\$5 - 8/ac	\$4.50 - 12.00/ac	\$6.50 - 10.00/ac
		\$50 - 70/hr	\$45 - 75/hr	\$55 - 75/hr

Total reports 51; Surveyed November - December 1999

Combining - straight cut header and pickup header

South - Dryland	\$12 - 17/ac	\$12 - 18/ac	\$16 - 18/ac
	\$140/hr *	\$125 - 140/hr	\$125 - 140/hr
South - Irrigated	\$22 - 25/ac	\$18 - 25/ac	\$18 - 25/ac
Central	\$12 - 17/ac	\$13 - 23/ac	\$14 - 18/ac
	\$85 - 145/hr	\$65 - 150/hr	\$100 - 130/hr
North	\$100 - 150/hr	—	—

Total reports 41; Surveyed November - December 1999

See cost calculations: swathing page 26 and combining page 28

These are survey results only - not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
Combining and hauling to bin	South	\$16 - 24/ac \$125/hr *	\$16 - 25/ac —	\$17 - 20/ac —
	Central	\$14 - 20/ac \$120 - 165/hr	\$13 - 25/ac \$100 - 200/hr	\$17 - 21/ac \$120 - 170/hr
	North	\$15/ac * \$100/hr *	\$15/ac * \$100/hr *	\$15/ac * \$100/hr *

Total reports 55; Surveyed November – December 1999

Grain drying	Alberta	\$40 - 70/hr \$0.10 - 0.30/bu	\$40 - 70/hr \$0.10 - 0.25/bu	\$40 - 70/hr \$0.10 - 0.25/bu
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Total reports 11; Surveyed November – December 1999

See cost calculation for grain drying page 29

Grain Hauling

Less than 20 miles	Alberta	\$4 - 6/T \$0.10 - 0.15/bu \$50 - 200/load	\$3.50 - 6.50/T \$20 - 80/hr \$50/load	\$4 - 6/T \$30 - 45/hr \$50/load
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Total reports 62; Surveyed November – December 1999

21 to 50 miles	Alberta	\$5 - 7/T \$0.14 - 0.25/bu \$2.50/lmi *	\$4.50 - 8.00/T \$55/hr —	\$5 - 7/T \$55/hr —
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Total reports 56; Surveyed November – December 1999

51 to 100 miles	Alberta	\$7 - 11/T \$0.20 - 0.25/bu \$3.00 - 3.25/lmi	\$5.75 - 11.50/T \$1.75 - 2.00/rmi * \$3/lmi *	\$7 - 10/T \$1.75 - 2.00/rmi * \$3/lmi *
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Total reports 52; Surveyed November – December 1999

101 to 200 miles	Alberta	\$9 - 15/T \$2.25 - 3.25/lmi \$1.50/rmi *	\$9 - 16/T — \$1.75/rmi - 2.00/rmi *	\$9 - 16/T — \$1.75/rmi - 2.00/rmi *
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Total reports 23; Surveyed November – December 1999

Over 200 miles	Alberta	\$16 - 28/T \$2.70 - 3.00/lmi \$1.35 - 1.60/rmi	\$14 - 35/T — \$1.35 - 1.60/rmi	\$16 - 28/T — \$1.35 - 1.60/rmi
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Total reports 11; Surveyed November – December 1999

See cost calculations for trucking on page 29

These are survey results only – not recommended rates.
NOTE: * Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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Haying

Cutting and conditioning hay – mower conditioner

South	\$10 - 12/ac	\$10 - 16/ac	\$10 - 15/ac
Central	\$8 - 12/ac \$50 - 70/hr	\$8 - 15/ac \$45 - 105/hr	\$10 - 12/ac \$50 - 70/hr
North	\$7 - 8/ac \$60/hr *	\$7 - 8/ac *	\$7 - 8/ac *

Total reports 44; Surveyed November – December 1999

Baling – small square

Alberta	\$0.35 - 0.45/bale	\$0.27 - 0.85/bale	\$0.40 - 0.45/bale
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Total reports 15; Surveyed November – December 1999

Stacking and hauling small square

Less than 1 mile	Alberta	\$0.30 - 0.40/bale	\$0.30 - 0.50/bale	\$0.30 - 0.40/bale
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Total reports 16; Surveyed November – December 1999

Baling, stacking and hauling small square

Less than 1 mile	Alberta	\$0.60 - 1.00/bale	\$0.72 - 1.00/bale	\$0.75 - 0.85/bale
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Total reports 13; Surveyed November – December 1999

Cutting, baling, stacking and hauling small square

Less than 1 mile	Alberta	\$1.25/bale - 1.35/bale	\$1.50/bale *	\$1.50/bale *
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Total reports 1; Surveyed November – December 1999

Baling – medium square – large square

Alberta	\$5.00 - 8.50/bale	\$6 - 7/bale	\$6 - 7/bale
	\$10 - 12/bale	\$8 - 12/bale	\$10 - 12/bale

Total reports ; Surveyed November – December 1999

Baling – small round – medium round

Alberta	\$4.00 - 5.50/bale	—	—
	\$5.00 - 6.50/bale	\$5.00 - 7.50/bale	\$5.00 - 7.50/bale

Total reports 4; Surveyed November – December 1999

Baling – large round

South	\$6.50 - 7.00/bale	\$6 - 10/bale	\$7 - 8/bale
Central	\$6.00 - 7.50/bale	\$4 - 9/bale	\$5 - 8/bale
North	\$5.00 - 7.50/bale	\$5 - 7/bale	\$5 - 7/bale

Total reports 80; Surveyed November – December 1999

See cost calculations page 27

These are survey results only – not recommended rates.
NOTE: * Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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Stacking and hauling large round

Less than 5 miles	Alberta	\$1.50 - 3.00/bale	\$1.50 - 3.50/bale \$60/hr *	\$1.75 - 2.75/bale \$60/hr *
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Total reports 27; Surveyed November - December 1999

Baling, stacking and hauling large round

Less than 5 miles	Alberta	\$8.50 - 10.50/bale	\$8.15 - 10.00/bale	\$8.50 - 10.00/bale
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Total reports 9; Surveyed November - December 1999

Hay hauling - large round

Up to 18 bales per load	0 - 10 miles	\$3 - 4/bale	\$1.50 - 4.00/bale	\$2 - 4/bale
	11 - 25 miles	\$4.50 - 6.50/bale	\$4.50 - 5.50/bale	\$4.50 - 5.50/bale
	26 to 60 miles	\$6.00 - 8.50/bale \$70/hr *	\$5.50 - 6.00/bale \$50 - 60/hr *	\$5.50 - 6/bale \$50 - 60/hr *

Total reports 12; Surveyed November - December 1999

Hay hauling - large round

30 or more bales per load	0 - 10 miles	\$5/bale	\$3 - 6/bale \$55 - 75/hr	\$3 - 5/bale \$55 - 75/hr
	11-25 miles	\$5.00 - 6.50/bale \$60 - 80/hr	\$3.50 - 6.00/bale \$55 - 75/hr	\$3.75 - 5.00/bale \$55 - 75/hr
	26 to 60 miles	\$7.00 - \$8.50/bale \$210 - 300/load	\$3.25 - 8.00/bale \$216 - 320/load	\$4.50 - 7.00/bale \$216 - 320/load
	Over 60 miles	\$3.00 - 3.25/lmi	\$2.75 - 3.50/lmi	\$2.75 - 3.50/lmi

Total reports 64; Surveyed November - December 1999

Silage

Cutting silage - swathing

4 - 12 ac/hr	Alberta	\$1.00 - 1.50/Ton \$55 - 60/hr \$8 - 10/ac	\$0.75 - 1.50/Ton \$45 - 75/hr \$5.50 - 11.00/ac	\$1/Ton \$55 - 60/hr \$8 - 10/ac
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Total reports 28; Surveyed November - December 1999

Chopping silage

20 - 55T/hr	Alberta	\$135 - 200/hr \$4 - 5/Ton \$18.50 - 24.00/load	\$125 - 250/hr \$4 - 5/Ton \$21 - 24/load	\$135 - 225/hr \$4 - 5/Ton \$21 - 24/load
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Total reports 16; Surveyed November - December 1999

These are survey results only - not recommended rates.
NOTE: * Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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Hauling silage

Truck and operator, 1 - 5 miles haul	Alberta	\$35 - 50/hr \$1.10 - 3.00/Ton \$1.00 - 2.50/Tonne \$7 - 42/load	\$35 - 70/hr — \$1/Tonne* —	\$40 - 50/hr — \$1/Tonne* —
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Total reports 25; Surveyed November - December 1999

Packing silage

Tractor with dozer, loader, or packer, 25 to 60 tons/hr	Alberta	\$45 - 65/hr \$4 - 10/load \$1.10 - 2.00/Ton	\$30 - 80/hr \$4 - 10/load \$0.75 - 2.00/Ton	\$45 - 60/hr \$4 - 10/load \$0.75 - 2.00/Ton
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Total reports 22; Surveyed November - December 1999

Chopping and hauling silage

1 - 5 mile haul	Alberta	\$180 - 250/hr \$5.50 - 6.50/Ton \$31 - 38/load	\$145 - 470/hr \$5 - 9/Ton \$30 - 38/load	\$180 - 325/hr \$5.25 - 6.50/Ton \$30 - 38/load
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Total reports 43; Surveyed November - December 1999

Swathing, chopping and hauling silage

Alberta	\$6.50 - 8.00/Ton \$285/hr *	\$6.50 - 7.25/Ton \$6.00 - 8.25/Tonne	\$6.50 - 7.25/Ton \$6.00 - 8.25/Tonne
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Total reports 7; Surveyed November - December 1998

Swathing, chopping, hauling and packing

Alberta	\$8 - 10/Ton \$7/Tonne *	— \$7/Tonne *	— \$7/Tonne *
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Total reports 1; Surveyed November - December 1999

Silage bagging

includes bag (customer provides (tractor)	Alberta			
	Bag Size 10 x 150	\$1,450 - 1,500/bag	\$1,400 - 1,500/bag	\$1,400 - 1,500/bag
	Bag Size 10 x 200	\$1,850 - 1,900/bag	\$1,600 - 1,925/bag	\$1,600 - 1,925/bag
	Bag Size 10 x 250	\$2,375 - 2,450/bag	\$2,400/bag *	\$2,400/bag *

Total reports 12; Surveyed November - December 1999

Silage chopping, hauling and bagging

includes bag (customer may be required to provide tractor)

1 - 3 mile haul	Alberta			
	Bag Size 10 x 150	\$2,500 - 2,900/bag	\$2,600 - 3,000/bag	\$2,600 - 3,000/bag
	Bag Size 10 x 200	\$3,200 - 3,750/bag	\$3,250 - 3,900/bag	\$3,400 - 3,600/bag
	Bag Size 10 x 250	\$4,000 - 4,800/bag	\$4,250 - 5,500/bag	\$4,400 - 4,800/bag

Total reports 16; Surveyed November - December 1999

See cost calculations on forage harvesting page 26

These are survey results only - not recommended rates.

NOTE: * Indicates one report received.

NOTE: Ton is an imperial ton. Tonne is a metric tonne.

Land Clearing and Breaking

Brushing and piling or repiling (with dozer blade)

Alberta

D6 (140 - 180 hp) \$80 - 85/hr

\$80 - 95/hr

\$85/hr

D7 (180 - 200 hp) \$90 - 95/hr

\$70 - 110/hr

\$90 - 105/hr

D8 (225 - 335 hp) \$100 - 130/hr

\$80 - 200/hr

\$100 - 150/hr

Total reports 41; Surveyed November 1999

Ripping or sub-soiling

Alberta

\$95 - 135/hr

\$95 - 145/hr

\$105 - 135/hr

\$22/ac *

—

—

Total reports 9; Surveyed November 1999

Root raking

Alberta

\$75 - 125/hr

—

—

Total reports 0; Surveyed November 1999

Rock picking

Alberta

\$125/hr *

\$125/hr *

\$125/hr *

Total reports 1; Surveyed November 1999

Discing

Alberta

\$10/ac

\$15 - 30/ac

\$25 - 30/ac

Higher rates for remote locations or rough terrain

\$85 - 100/hr

\$70 - 145/hr

\$75 - 110/hr

Total reports 15; Surveyed November 1999

Plowing

Alberta

\$50 - 65/ac

\$50 - 60/ac

\$50 - 60/ac

See tillage section, page 4, for crop or hay
and pasture plowing

\$65 - 120/hr

\$85 - 125/hr

\$85 - 125/hr

Total reports 6; Surveyed November 1999

Rototilling

Alberta

\$90 - 220/hr

\$86 - 220/hr

\$86 - 220/hr

Total reports 3; Surveyed November 1999

Dugout construction, drainage, land leveling

Alberta

D6 Cat

—

\$85 - 95/hr

\$85 - 95/hr

D7 Cat

—

\$70 - 110/hr

\$75 - 105/hr

D8 Cat

—

\$80 - 140/hr

\$100 - 125/hr

Excavators,

—

\$40 - 200/hr

\$75 - 135/hr

Scrapers and others

Total reports 63; Surveyed November 1999

These are survey results only - not recommended rates.

NOTE: * Indicates one report received.

Machinery Rental

Anhydrous ammonia applicator – pull-type (rental cost with product purchase)	Alberta	\$1.25 - 2.50/ac	\$1 - 4/ac	\$1 - 4/ac
	Delivery extra	—	\$20 - 40/Tonne	\$20 - 40/Tonne
	Delivery included	—	\$60 - 90/Tonne	\$60 - 90/Tonne

Total reports 11; Surveyed June & November 1999

Liquid fertilizer applicator – pull-type (rental cost with product purchase)	Alberta	\$1.00 - 2.00/ac	\$1.00 - 2.50/ac	\$1.50 - 2.00/ac
		—	\$200/day *	\$200/day *

Total reports 17; Surveyed June & November 1999

Granular fertilizer applicator – pull-type (rental cost with product purchase)	South	N/C - \$1/ac	N/C - \$1/ac	N/C - \$1/ac
		\$5 - 8/T	\$5 - 10/T	\$5 - 6/T
	Central	N/C - \$1/ac	N/C - \$3.25/ac	N/C - \$1.50/ac
		\$7 - 9/T	\$3 - 20/T	\$5 - 10/T
		\$25 - 50/day	\$20 - 100/day	\$20 - 50/day
	North	N/C - \$50/day	N/C - \$50/day	N/C - \$50/day

Total reports 76; Surveyed June & November 1999

Granular herbicide applicator – pull-type (rental cost with product purchase)	Alberta	\$1.00 - 2.50/ac	\$0.50 - 3.75/ac	\$0.50 - 2.50/ac
		\$50/day	\$50 - 100/day	\$50/day

Total reports 35; Surveyed June & November 1999

Soil Testing

Soil testing

(lab fees included)

Alberta			
Four nutrients	\$30 - 45/field	\$25 - 100/field	\$25 - 50/field
With micronutrients	\$45 - 65/field	\$45 - 140/field	\$45 - 80/field

Total reports 143; Surveyed June & November 1999

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Operation	Location	Most Common 1998	Range 1999	Most Common 1999
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Grain Processing

Grinding (mixing cost included)	Alberta	\$14 - 20/T	\$12 - 25/T	\$15 - 20/T
Total reports 16; Surveyed November – December 1999				
Dry rolling (mixing cost included)	Alberta	\$12 - 20/T	\$12 - 25/T	\$12 - 20/T
Total reports 17; Surveyed November – December 1999				
Steam rolling (mixing cost included)	Alberta	\$15 - 30/T	\$15 - 30/T	\$15 - 30/T
Total reports 6; Surveyed November – December 1999				
Pelleting (mixing cost included)	Alberta	\$27 - 40/T	\$27 - 40/T	\$27/T
Total reports 4; Surveyed November – December 1999				
Processed grain delivery – 7 to 13 tonne load	Alberta	\$6.50/T *	\$5 - 10/T	\$6.50 - 7.50/T
		\$40 - 50/load	—	—
0 to 35 miles		\$50/hr *	\$50/hr *	\$50/hr *
Total reports 10; Surveyed November – December 1999				

These are survey results only – not recommended rates.

NOTE: * Indicates one report received.

Livestock Feeding

Feeding and backgrounding calves

Alberta			
Yardage	\$0.15 - 0.18/day	\$0.11 - 0.18/day	\$0.15 - 0.18/day
Bedding charge	\$16 - 30/lg bale	\$14 - 30/lg bale	\$18 - 30/lg bale
	\$0.05 - 0.09/hd/day	\$0.05 - 0.10/hd/day	\$0.05 - 0.09/hd/day
Death loss	1 - 2%	0.5 - 2.0%	0.5 - 1.5%
Total cost/lb gain **	\$0.60 - 0.75/lb	\$0.55 - 0.78/lb	\$0.60 - 0.75/lb

Total reports 28; Surveyed January 1999

Finishing calves

Alberta			
Yardage	\$0.12 - 0.18/day	\$0.11 - 0.20/day	\$0.14 - 0.18/day
Bedding charge	\$16 - 21/lg bale	\$17 - 35/lg bale	\$18 - 24/lg bale
	\$0.05 - 0.06/hd/day	\$0.01 - 0.10/hd/day	\$0.05/hd/day
Death loss	0.70 - 1.50%	0.25 - 2.5%	0.05 - 1.5%
Total cost/lb gain **	\$0.60 - 0.70/lb	\$0.55 - 0.80/lb	\$0.60 - 0.68/lb

Total reports 31; Surveyed January 1999

Finishing yearlings

Alberta			
Yardage	\$0.12 - 0.16/day	\$0.11 - 0.18/day	\$0.14 - 0.18/day
Bedding charge	\$14 - 20/lg bale	\$13 - 35/lg bale	\$13 - 24/lg bale
	\$0.03 - 0.06/hd/day	\$0.01 - 0.10/hd/day	\$0.05 - 0.06/hd/day
Death loss	0.25 - 0.50%	0.25 - 1.00%	0.25 - 1.00%
Total cost/lb gain **	\$0.60 - 0.70/lb	\$0.50 - 0.71/lb	\$0.55 - 0.65/lb

Total reports 29; Surveyed January 1999

Overwintering Cows

Total cost/day	\$1.25 - 1.50/day	\$0.60 - 1.55/day	\$1.25 - 1.50/day
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Total reports 8; Surveyed January 1999

Jan. 2000 data will be available in the "Custom Rates Survey Livestock Operations" in March 2000

These are survey results only - not recommended rates.

NOTE: * Indicates one report received.

NOTE: ** Does not include interest.

NOTE: Ton is an imperial ton; Tonne is a metric tonne.

Livestock Hauling

Possum belly liner

50,000 - 65,000 lb)

lmi = loaded mile

Alberta

0 - 20 mi

\$150 - 200/load

\$100 - 300/load

\$140 - 200/load

\$60 - 85/hr

\$60 - 95/hr

\$60 - 95/hr

21 - 50 mi

\$200 - 265/load

\$150 - 325/load

\$175 - 295/load

\$3.00 - 3.50/lmi *

\$3.25 - 4.00/lmi

\$3.25 - 4.00/lmi

51 - 100 mi

\$300 - 450/load

\$260 - 445/load

\$300 - 445/load

\$3.25 - 4.00/lmi

\$3.00 - 4.00/lmi

\$3.00 - 4.00/lmi

\$70 - 75/hr

—

—

100 + mi

\$2.60 - 3.50/lmi

\$2.60 - 4.00/lmi

\$2.60 - 3.50/lmi

\$1.00 - 1.25/cwt

\$0.80 - 1.65/cwt

\$1.25 - 1.65/cwt

\$380 - 550/load

\$380 - 550/load

\$380 - 550/load

Total reports 106; Surveyed November - December 1999

Straight liner, body job and gooseneck

(16,000 - 42,000 lb)

lmi = loaded mile

Alberta

\$150 - 300/load

\$300/load *

\$300/load *

\$2.25 - 3.50/lmi

\$2.40 - 2.60/lmi

\$2.40 - 2.60/lmi

\$1.40 - 1.50/cwt

\$1.40/cwt

\$1.40/cwt

\$30 - 65/hr

\$50 - 55/hr

\$50 - 55/hr

Total reports 10; Surveyed November - December 1999

Other livestock (horses, sheep, etc.)

Alberta

Hogs

\$2.65/hog

\$2.65/hog *

\$2.65/hog *

\$1.60/cwt *

\$1.60/cwt *

\$1.60/cwt *

Sows/Boar

\$6/sow or boar

—

—

Total reports 3; Surveyed November - December 1999

These are survey results only - not recommended rates.
NOTE: * Indicates one report received.

Corral Cleaning

Corral cleaning

	Alberta			
Loader, 4 Spreaders, 5 Operators		\$260 - 315/hr	\$250 - 350/hr	\$285 - 315/hr
Loader, 3 Spreaders, 4 Operators		\$180 - 230/hr	\$180 - 255/hr	\$180 - 255/hr
Loader, 2 Spreaders, 3 Operators		\$160 - 190/hr	\$135 - 185/hr	\$150 - 185/hr
Loader, 1 Spreader, 1 Operator		\$65 - 90/hr	\$65 - 86/hr	\$65 - 86/hr
Loader only, 1 Operator		\$45 - 85/hr	\$40 - 85/hr	\$45 - 75/hr

Total reports 106; Surveyed November - December 1999

Fencing

Barbed wire fence construction

	Alberta	\$1,000 - 1,800/mi	\$1,000 - 2,000/mi	\$1,200 - 1,800/mi
		\$60 - 70/hr	\$40 - 100/hr	\$65 - 80/hr
		\$2/metre *	\$1.50 - 1.80/metre	\$1.50 - 1.80/metre
Labor and equipment		\$0.75 - 1.50/ft	\$1,000 - 1,500/km *	\$1,000 - 1,500/km *

Total reports 36; Surveyed November - December 1999

High tensile wire fence construction

includes labor, some material and equipment	Alberta	—	\$70/hr *	\$70/hr *
		\$0.38/ft *	\$0.30/ft *	\$0.30/ft *

Total reports 2; Surveyed November - December 1999

Post pounding

Labor and equipment	Alberta	\$60 - 75/hr	\$40 - 115/hr	\$65 - 100/hr
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Total reports 22; Surveyed November - December 1999

Barbed wire fence removal

Labor and equipment	Alberta	\$500 - 600/mi	\$500 - 750/mi	\$500 - 750/mi
		\$60 - 75/hr	\$40 - 100/hr	\$65 - 100/hr

Total reports 20; Surveyed November - December 1999

These are survey results only - not recommended rates.

NOTE: * Indicates one report received.

Land Leasing

Cash rent - cropland	Location	Average 1998	Range 1999	Most Common 1999	Average 1999
	South - Irrigated	\$77.48/ac	\$25 - 200/ac	\$42 - 100/ac	\$84.00/ac
	South - Dryland	\$25.79/ac	\$8.63 - 40/ac	\$15.00 - 32.50/ac	\$24.71/ac
	Central	\$28.97/ac	\$9.38 - 58.33/ac	\$20 - 40/ac	\$28.39/ac
	North	\$14.97/ac	\$8.38 - 22/ac	\$17 - 20/ac	\$16.46/ac

Total reports 113; Surveyed March 1999

Length of Lease - cropland	Cash rent		Crop share	
	Number of reports	Number of acres	Number of reports	Number of acres
1	34	30	26	41
2	3	3	4	6
3	27	24	14	22
4	7	6	0	0
5	33	29	8	13
6+	9	8	11	18
Total	113	100	63	100

Total reports 176; Surveyed March 1999

Type of Lease - cropland	Cash rent		Crop share	
	Number of reports	Number of acres	Number of reports	Number of acres
South	26	58	19	42
Central	73	70	32	30
North	14	54	12	46

Total reports 176; Surveyed March 1999

These are survey results only - not recommended rates.

Cropshare rental - cropland	Landlord	Tenant	No. of leases	Reporting	Notes
Alberta					
South	1/4 : 3/4		0	0	Tenant pays all but taxes in 11 of 19 agreements
	1/3 : 2/3		17	90	
	1/5 : 4/5		1	5	
	2/5 : 3/5		1	5	
	1/2 : 1/2		0	0	
Central	1/5 : 4/5		4	13	Tenant pays all but taxes in 12 of 32 agreements
	1/4 : 3/4		2	6	
	1/3 : 2/3		22	69	
	2/5 : 3/5		3	9	
	1/2 : 1/2		1	3	
North	1/5 : 4/5		2	17	Tenant pays all but taxes in 8 of 12 agreements
	1/4 : 3/4		7	58	
	1/3 : 2/3		3	25	
	2/5 : 3/5		0	0	

Total Reports 63; Surveyed March 1999

Cash rent - private pasture	Location	Most Common 1998	Range 1999	Most common 1999
South		\$15 - 18/AUM	\$7.50 - 20.00/AUM	\$18 - 20/AUM
		\$20/hd/month *	\$15/ac *	\$15/ac *
Central		\$12 - 15/AUM	\$8 - 21/AUM	\$10 - 15/AUM
		\$12 - 16/hd/mo	\$12 - 15/hd/mo	\$12 - 15/hd/mo
North		\$10/ac *	—	—

Total Reports 37; Surveyed March 1999

Crownland	Location	Total Acreage	Rate AUM 1998	Rate AUM 1999
	South	3,100,000	\$2.79	\$2.79
	Central	800,000	\$2.32	\$2.32
	North	1,700,000	\$1.39	\$1.39

Surveyed March 1999

These are survey results only - not recommended rates.
NOTE: * Indicates one report received.

Alberta Average Farm Input Prices

Agricultural Input Prices

The following average prices are based on prices quoted the first week of each month at 18 centres across Alberta. These prices are intended as a guide only. Actual current prices may differ.

Items	Average 1997	Average 1998	December 1999
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Building Supplies

Lumber 2 x 6 spruce, M	\$ 722.88	\$ 650.38	\$ 620.59
Sheathing, plywood, spruce, 3/8", 4' x 8' sht	\$ 15.33	\$ 14.95	\$ 16.87
Cement, 40 kg	\$ 8.61	\$ 8.72	\$ 8.84
Barn paint, oil base, 20 litres	\$ 69.11	\$ 68.68	\$ 70.68
Pipe, plastic, 3/4", 75 psi, 100' coil	\$ 25.38	\$ 24.50	\$ 24.15
Rods, re-enforcing 1/2", 6 metres	\$ 4.20	\$ 4.24	\$ 4.12
Barbed wire, 12 gauge, double strand	\$ 41.82	\$ 41.97	\$ 42.42

Machinery Repairs

Truck tires, 1st line, P235-75R-15, each	\$ 117.35	\$ 117.91	\$ 120.17
Battery, 525 cranking amp, each	\$ 74.03	\$ 74.70	\$ 75.46
V-belt, 1/2" x 70", ea.	\$ 9.36	\$ 10.04	\$ 10.24
Antifreeze, 4 litres	\$ 8.40	\$ 9.20	\$ 8.72
Mechanical repairs, per hour	\$ 49.54	\$ 52.64	\$ 54.02

Crop Supplies

Baler twine, sisal 9000 ft	\$ 33.75	\$ 33.61	\$ 34.54
Fertilizer, 46-0-0, tonne, bulk	\$ 339.84	\$ 286.77	\$ 271.82
Fertilizer, 11-51-0, tonne, bulk	\$ 434.39	\$ 415.90	\$ 411.96
Fertilizer, 82-0-0, tonne, bulk (Applicator Inc.)	\$ 533.87	\$ 499.21	\$ 434.51
2-4 D Low Volatile, 20 litres	\$ 96.97	\$ 100.52	\$ 105.30
Avadex BW, Liquid, 5 gallon	\$ 200.99	\$ 202.38	\$ 199.01
Trifluralin, Treflan, 17 litre case	\$ 231.23	\$ 236.66	\$ 240.64
Seed; wheat, 100 kg, bulk	\$ 29.59	\$ 28.89	\$ 27.56
Seed; barley, 100 kg, bulk	\$ 30.46	\$ 29.66	\$ 27.22
Seed, canola, treated, 100 kg, bagged	\$ 308.73	\$ 306.22	\$ 370.20

Feeds

Calf Starter Supplement, (20-24%), 25 kg	\$ 10.36	\$ 10.64	\$ 10.05
Dairy Supplement, (32%), 25 kg	\$ 11.79	\$ 11.85	\$ 11.10
Hog Supplement, (40%), 25 kg	\$ 13.97	\$ 13.67	\$ 12.45
Broiler grower, (18-20%), 25 kg	\$ 9.43	\$ 9.81	\$ 9.57
Cattle mineral, 25 kg	\$ 18.59	\$ 19.23	\$ 19.43
Feed barley, No. 1, (Farm Gate), bu	\$ 2.38	\$ 2.27	\$ 2.10
Feed wheat, No. 1, (Farm Gate), bu	\$ 3.08	\$ 2.96	\$ 2.82
Hay, good quality baled, ton	\$ 80.39	\$ 77.98	\$ 73.74

Livestock Supplies

Penicillin, injectable, 100 cc	\$ 7.28	\$ 7.00	\$ 7.25
Vitamin A D E, injectable, 100 cc	\$ 9.56	\$ 9.11	\$ 9.52

Fuel and Oil

Purple gas, 100 litres (minus prov. rebate only)	\$ 44.47	\$ 41.14	\$ 41.29
Diesel fuel, 100 litres, (minus prov. rebate only)	\$ 32.43	\$ 29.66	\$ 28.87
Propane, bulk, 100 litres	\$ 28.65	\$ 25.59	\$ 25.00
Natural gas, GJ	\$ 2.80	\$ 2.91	\$ 3.63
Oil, for diesel engines, 5 litres	\$ 9.52	\$ 9.58	\$ 9.68

Other

Farm labour, per month, without board	1,628.95	\$ 1,666.12	\$ 1693.20
Tractor, 100HP/UP	\$ 74,153.28	\$ 79,237.70	\$ 80,841.84
Tractor, 170HP/UP	\$138,223.20	\$146,289.30	\$150,486.51
Combine, self-propelled	\$183,803.50	\$197,730.29	\$209,658.06
Chisel plow, 23'-27'	\$ 21,144.23	\$ 22,648.89	\$ 24,152.84
Round baler, pull type	\$ 29,948.82	\$ 31,999.35	\$ 33,804.92
Double disc, heavy duty 19'-21'	\$ 22,814.91	\$ 23,837.59	\$ 24,948.85
Truck, 1/2 ton, Ford/Chev	\$ 21,171.30	\$ 21,996.02	\$ 22,975.70

Source: Statistics and Data Development Unit

Farm Machinery Costs

How to Use the Farm Machinery Cost Guide

- If you are a **full-time custom operator**, then use the Total Machine Cost + Labor + Profit for estimating a charge. Be sure to adjust fixed costs if your annual hours of use differ much from those quoted.

Note: Labor and profit margin are not included in the tables on pages 22 through 30.

- If you are doing custom work on a **good neighbor payment basis**, then it may not be necessary to recover all the fixed costs of owning the machine since these costs represent an annual cost incurred whether or not custom work is done. However, the rate should cover all variable costs that include an allowance for repairs. Labor and profit margin can be adjusted to meet each situation.
- If you plan to do custom work in addition to your own work, so as to partly justify the ownership of a larger machine, then the custom charge should cover variable costs, labor, a profit margin **plus** a proportion of fixed costs calculated as follows:

$$\text{Proportion of Fixed Costs} = \frac{\text{Hours of Custom Work}}{\text{Total annual hours of use}} \times \left[\frac{\text{Total fixed costs}}{\text{Total annual hours of use}} \right]$$

- If you are renting out machinery, then you will wish to cover fixed costs at least and those variable costs such as lubrication and repairs that may not be already covered by the renter.
- If you wish to assess a rate for a full operation such as silage making, which requires several machines, then add the hourly costs of each activity, making sure there is neither omission nor duplication. Use the worksheets provided in part three. The purchase cost estimates are based on average cash prices as of February 1997 for each class of machine. These estimates represent current replacement costs that should be budgeted and charged for, even if you do custom work with older machines, unless the older machine will not do a comparable job.

Key assumptions

Estimated years of life, annual hours of use and annual repair rates are specified for each type of machine. The salvage value of a new machine is considered to be 10 per cent of the new price.

Diesel fuel is charged at \$0.30 per litre and propane at \$0.22 per litre. Fuel costs vary throughout the year with supply and demand.

Return on investment is calculated using a Bank of Canada 90-day T-bill rate of 4.0 per cent with an additional allowance for risk of 6 per cent. Inflation was included at a 2.0 per cent rate. Income tax considerations have not been included in the calculations.

Other considerations

- Favorable or unfavorable working conditions, such as size of job, distance, access, topography, soil type and possible down time, may modify the guide figures. Per hour charges allow for some of these situations.
- Different soils and topography may require power units of a different size than those shown here.
- Charges per unit of output such as per acre, per bushel or per bale, defined on work rates per hour, may be quite different from those quoted. Per hour charging overcomes some of these uncertainties.
- You can adjust the labor charge according to your actual cost of hired work or the opportunity cost of your own labor.
- If your experience and farm records suggest that other costs and assumptions would suit your situation, then recalculate using the worksheets in part three or use the online Machinery Cost Calculator at <http://www.agric.gov.ab.ca/machcost>.
- Earlier and faster may be cheaper. There are costs attached to late completion of operations. The rewards for timely, quality work quickly completed by large machines are only earned if the support system, including seed and fertilizer supplies and grain trucking, is well organized.

**IMPORTANT NOTE CONCERNING THE FOLLOWING
PAGES**

**THE PAGES WHICH FOLLOW HAVE BEEN FILMED
TWICE IN ORDER TO OBTAIN THE BEST
REPRODUCTIVE QUALITY**

**USERS SHOULD CONSULT ALL THE PAGES
REPRODUCED ON THE FICHE IN ORDER TO OBTAIN
A COMPLETE READING OF THE TEXT.**

**REMARQUE IMPORTANTE CONCERNANT LES
PAGES QUI SUIVENT**

**LES PAGES SUIVANTES ONT ÉTÉ REPRODUITES EN
DOUBLE AFIN D'AMÉLIORER LA QUALITÉ DE
REPRODUCTION**

**LES UTILISATEURS DOIVENT CONSULTER TOUTES
LES PAGES REPRODUITES SUR LA FICHE AFIN
D'OBTENIR LA LECTURE DU TEXTE INTÉGRAL**

Tractor - 2WD

Years life = 10
 Annual use (Hrs) = 200, 400*, 600
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

PTO H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
40 HP without cab	200	8	31,650	23.90	5.13	
	400			11.95		
	600			7.97		
60 HP without cab	200	13	39,700	29.98	7.46	
	400			14.99		
	600			9.99		
80 HP	200	17	61,175	46.19	10.45	
	400			23.10		
	600			15.40		
100 HP	200	22	80,975	61.15	13.66	
	400			30.57		
	600			20.38		
120 HP	200	28	93,975	70.96	16.71	
	400			35.48		
	600			23.65		
150 HP	200	32	108,450	81.89	19.17	
	400			40.95		
	600			27.30		
180 HP	200	39	126,863	95.80	22.97	
	400			47.90		
	600			31.93		
215 HP including MFD	200	42	149,425	112.83	25.70	
	400			56.42		
	600			37.61		

* This Annual Hours Used figure is typical.

** FWA

MFWD approx. 10,000 under 100 HP

approx. 15,000 over 100 HP

Tractor - 4WD

Years life = 12
 Annual use (Hrs) = 200, 400*, 600
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Engine H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
110 HP BI-directional	200	22	107,000	72.92	15.62	
	400			36.46		
	600			24.31		
240 HP	200	40	134,033	91.34	23.85	
	400			45.67		
	600			30.45		
275 HP	200	53	140,000	95.41	28.79	
	400			47.70		
	600			31.80		
300 HP	200	58	157,867	107.59	31.85	
	400			53.79		
	600			35.86		
350 HP	200	62	180,083	122.73	34.90	
	400			61.36		
	600			40.91		
425 HP	200	85	205,333	139.93	44.72	
	400			69.97		
	600			46.64		

* This Annual Hours Used figure is typical.

** Priced without PTO.

Tractor - 2WD

Years life = 10
 Annual use (Hrs) = 200, 400*, 600
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

PTO H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
40 HP without cab	200	8	31 650	23 90	5 13	29.03
	400			11 95		17.08
	600			7 97		13.10
60 HP without cab	200	13	39 700	29 98	7 46	37.44
	400			14 99		22.45
	600			9 99		17.46
80 HP	200	17	61 175	46 19	10 45	55.65
	400			23 10		33.55
	600			15 40		25.85
100 HP	200	22	80 975	61 15	13 66	74.81
	400			30 57		44.24
	600			20 38		34.04
120 HP	200	28	93 975	70 96	16 71	87.67
	400			35 48		52.19
	600			23 65		40.36
150 HP	200	32	108 450	81 89	19 17	101.07
	400			40 95		60.12
	600			27 30		46.47
180 HP	200	39	126 863	95 80	22 97	118.76
	400			47 90		70.87
	600			31 93		54.90
215 HP including MFD	200	42	149 425	112 83	25 70	138.53
	400			56 42		82.11
	600			37 61		63.31

* This Annual Hours Used figure is typical.

FWA

MFD approx. 10,000 under 100 HP

approx. 15,000 over 100 HP

Tractor – 4WD

Years life = 12
 Annual use (Hrs) = 200, 400*, 600
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Engine H.P.	Annual Hours Used (hrs)	Diesel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (Labor Omitted**) (\$/hr)	Total Machine Cost (\$/hr)
110 HP Bi-directional	200			72.92		88.54
	400	22	107,000	36.46	15.62	52.08
	600			24.31		39.92
240 HP	200			91.34		115.20
	400	40	134,033	45.67	23.85	69.52
	600			30.45		54.30
275 HP	200			95.41		124.19
	400	53	140,000	47.70	28.79	76.49
	600			31.80		60.59
300 HP	200			107.59		139.44
	400	58	157,867	53.79	31.85	85.64
	600			35.86		67.71
350 HP	200			122.73		157.62
	400	62	180,083	61.36	34.90	96.26
	600			40.91		75.81
425 HP	200			139.93		184.66
	400	85	205,333	69.97	44.72	114.69
	600			46.64		91.37

* This Annual Hours Used figure is typical.

** Priced without PTO.

Cultivation Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Plows	Life = 15		Annual hours use = 150				Annual repair rate = 6% Replacement cost		
3 x 16" 3-point	60	8100	14.99	7.46	6.59	3.24	32.28	1.7	19.33
6 x 18" Trailing	180	20 900	47.90	22.97	17.00	8.36	96.22	3.9	24.74
8 x 16" Trailing	180	27 500	47.90	22.97	22.36	11.00	104.23	4.6	22.86
10 x 18" Trailing	275	38 800	47.70	28.79	31.55	15.52	123.56	6.4	19.43
Hd cultivators	Life = 15		Annual Hours Use = 250				Annual repair rate = 6% Replacement cost		
14" Single	80	13 700	23.10	10.45	6.68	3.29	43.52	5.9	7.36
25" Wing	150	21 167	40.95	19.17	10.33	5.08	75.53	10.7	7.08
31" Wing	180	25 967	47.90	22.97	12.67	6.23	89.77	13.2	6.83
42" Wing	275	32 430	47.70	28.79	15.85	7.80	100.14	17.9	5.60
60" Wing	350	57 233	61.36	34.90	27.93	13.74	137.92	25.5	5.42
Field cultivators	Life = 15		Annual Hours Use = 250				Annual repair rate = 6% Replacement cost		
24" Wing	100	26 250	30.57	13.66	12.81	6.30	63.34	10.2	6.22
32" Wing	150	28 533	40.95	19.17	13.90	6.85	80.89	13.6	5.97
42" Wing	180	33 933	47.90	22.97	16.56	8.14	95.57	17.9	5.34
Discs – tandem HD	Life = 15		Annual hours use = 150				Annual repair rate = 6% Replacement cost		
16" Single	120	16 933	35.48	16.71	13.77	6.77	72.73	6.8	10.73
24" Wing	180	29 033	47.90	22.97	23.61	11.61	106.09	10.2	10.42
30" Wing	240	41 450	45.67	23.85	33.71	16.58	119.81	12.7	9.43
12" Heavy offset	150	17 000	40.95	19.17	13.82	6.80	80.74	5.1	15.86
16" Heavy offset	180	20 700	47.90	22.97	16.83	8.28	95.98	6.8	14.16
Rototillers	Life = 15		Annual hours use = 100				Annual repair rate = 6% Replacement cost		
5" Rotor	80	2 850	23.10	10.45	3.48	1.71	38.74	1.3	30.50
6" Rotor	100	3 500	30.57	13.66	4.27	2.10	50.61	1.6	32.44
8" Rotor	120	3 700	35.48	16.71	4.51	2.22	58.92	2.0	29.46

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Cultivation/Seeding/Spraying Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Harrows Life = 15 Annual hours use = 40 Annual repair rate = 2% Replacement cost									
Spring tooth 50"	100	9,500	30.57	13.66	28.97	4.75	77.96	29.7	2.63
Spring tooth 70"	150	13,500	40.95	19.17	41.17	6.75	108.04	41.6	2.60
Harrow packers 50"	150	19,833	40.95	19.17	60.48	9.92	130.52	21.2	6.15
Harrow packers 70"	240	25,233	45.67	23.85	76.95	12.62	159.09	29.7	5.36
Heavy Harrow 50"	180	20,000	47.90	22.97	60.99	10.00	141.86	21.2	6.69
Heavy Harrow 70"	180	24,333	47.90	22.97	74.21	12.17	157.24	29.7	5.30
Seed drills Life = 15 Annual hours use = 100 Annual repair rate = 2% Replacement cost									
End wheel 12"	60	12,750	14.99	7.46	15.55	2.55	40.55	4.4	9.30
Hoe drill 12"	80	18,400	23.10	10.45	22.45	3.68	59.68	4.4	13.69
Zero Min. till 10"	80	36,350	23.10	10.45	44.34	7.27	85.16	3.7	23.20
Air seeder w/cult. Life = 15 Annual hours use = 150 Annual repair rate = 3% Replacement cost									
30" Air seeder	180	71,325	47.90	22.97	100.62	14.27	185.75	10.9	17.03
40" Air seeder	300	82,450	53.79	31.85	116.31	16.49	218.44	14.6	15.00
50" Air seeder	350	105,825	61.36	34.90	143.28	21.17	266.71	18.2	14.65
Air drills Life = 6 Annual hours use = 100 Annual repair rate = 3% Replacement cost									
30" Air drill	240	82,225	45.67	23.85	173.99	24.67	268.18	10.9	24.58
40" Air drill									
With packer wheels	300	102,625	53.79	31.85	217.16	30.79	333.59	14.6	22.91
50" Air drill									
With packer wheels	425	129,475	69.97	44.72	273.97	38.84	427.51	18.2	23.52
Sprayer (trailer) Life = 15 Annual hours use = 50 Annual repair rate = 3% Replacement cost									
625 gallon 80" low vol									
Air assist	80	30,000	23.10	10.45	79.19	18.00	124.74	40.8	3.06
800 gallon 80"	150	26,350	40.95	19.17	64.29	15.81	440.22	40.8	3.44
1200 gallon 110"	150	35,000	40.95	19.17	85.39	21.00	166.51	45.9	2.98
Sprayer (SP) Life = 10 Annual hours use = 200 Annual repair rate = 3% Replacement cost									
400 gallon 70" 125HP									
High clearance	125	99,000	74.76	20.34			95.09	50.9	1.87
600 gallon 70" 135HP									
High clearance	135	143,060	100.48	26.24			126.71	50.9	2.49
800 gallon 90" 175HP									
High clearance	175	200,800	151.63	38.75			190.37	60.9	2.91
1000 gallon 120" 250HP/200		248,480	187.63	48.24			235.87	110.0	2.14

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Cultivation Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Plows Life = 15 Annual hours use = 150 Annual repair rate = 6% Replacement cost									
3 x 16" 3-point	60	8100	14.99	7.46	6.59	3.24		1.7	
6 x 18" Trailing	180	20,900	47.90	22.97	17.00	8.36		3.9	
8 x 16" Trailing	180	27,500	47.90	22.97	22.36	11.00		4.6	
10 x 18" Trailing	275	38,800	47.70	28.79	31.55	15.52		6.4	
Hd cultivators Life = 15 Annual Hours Use = 250 Annual repair rate = 6% Replacement cost									
14' Single	80	13,700	23.10	10.45	6.68	3.29		5.9	
25' Wing	150	21,167	40.95	19.17	10.33	5.08		10.7	
31' Wing	180	25,967	47.90	22.97	12.67	6.23		13.2	
42' Wing	275	32,490	47.70	28.79	15.85	7.80		17.9	
60' Wing	350	57,233	61.36	34.90	27.93	13.74		25.5	
Field cultivators Life = 15 Annual Hours Use = 250 Annual repair rate = 6% Replacement cost									
24' Wing	100	26,250	30.57	13.66	12.81	6.30		10.2	
32' Wing	150	28,533	40.95	19.17	13.92	6.85		13.6	
42' Wing	180	33,933	47.90	22.97	16.56	8.14		17.9	
Discs – tandem HD Life = 15 Annual hours use = 150 Annual repair rate = 6% Replacement cost									
16' Single	120	16,933	35.48	16.71	13.77	6.77		6.8	
24' Wing	180	29,033	47.90	22.97	23.61	11.61		10.2	
30' Wing	240	41,450	45.67	23.85	33.71	16.58		12.7	
12' Heavy offset	150	17,000	40.95	19.17	13.82	6.80		5.1	
16' Heavy offset	180	20,700	47.90	22.97	16.83	8.28		6.8	
Rototillers Life = 15 Annual hours use = 100 Annual repair rate = 6% Replacement cost									
5' Rotor	80	2,850	23.10	10.45	3.48	1.71		1.3	
6' Rotor	100	3,500	30.57	13.66	4.27	2.10		1.6	
8' Rotor	120	3,700	35.48	16.71	4.51	2.22		2.0	

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Cultivation/Seeding/Spraying Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Harrows Life = 15 Annual hours use = 40 Annual repair rate = 2% Replacement cost									
Spring tooth 50'	100	9,500	30.57	13.66	28.97	4.75	77.36	29.7	2.60
Spring tooth 70'	150	13,500	40.95	19.17	41.17	6.75	106.04	41.6	2.59
Harrow packers 50'	150	19,833	40.95	19.17	60.48	9.92	140.83	21.2	6.63
Harrow packers 70'	240	25,233	45.67	23.85	76.95	12.62	186.04	29.7	6.26
Heavy Harrow 50'	180	20,000	47.90	22.97	60.99	10.00	141.98	21.2	6.70
Heavy Harrow 70'	180	24,333	47.90	22.97	74.21	12.17	167.34	29.7	5.63
Seed drills Life = 15 Annual hours use = 100 Annual repair rate = 2% Replacement cost									
End wheel 12'	60	12,750	14.99	7.46	15.55	2.55	45.15	4.4	10.26
Hoe drill 12'	80	18,400	23.10	10.45	22.45	3.68	66.03	4.4	15.00
Zero/Min. till 10'	80	36,350	23.10	10.45	44.34	7.27	86.16	3.7	23.29
Air seeder w/cult. Life = 15 Annual hours use = 150 Annual repair rate = 3% Replacement cost									
30' Air seeder	180	71,325	47.90	22.97	100.62	14.27	155.75	10.9	17.50
40' Air seeder	300	82,450	53.79	31.85	116.31	16.49	219.44	14.6	15.00
50' Air seeder	350	105,825	61.36	34.90	149.28	21.17	286.71	18.2	15.75
Air drills Life = 6 Annual hours use = 100 Annual repair rate = 3% Replacement cost									
30' Air drill	240	82,225	45.67	23.85	173.99	24.67	255.15	10.9	24.08
40' Air drill									
With packer wheels	300	102,625	53.79	31.85	217.16	30.79	325.35	14.6	22.31
50' Air drill									
With packer wheels	425	129,475	69.97	44.72	273.97	38.84	437.51	18.2	23.82
Sprayer (trailer) Life = 15 Annual hours use = 50 Annual repair rate = 3% Replacement cost									
625 gallon 80' low vol									
Air assist	80	30,000	23.10	10.45	73.19	18.00	134.74	40.8	3.30
800 gallon 80'	150	26,350	40.95	19.17	64.29	15.81	140.32	40.8	3.44
1200 gallon 110'	150	35,000	40.95	19.17	85.39	21.00	195.91	55.9	3.50
Sprayer (SP) Life = 10 Annual hours use = 200 Annual repair rate = 3% Replacement cost									
400 gallon 70' 125HP									
High clearance	125	99,000	74.76	20.34	—	—	95.10	50.9	1.87
600 gallon 70' 135HP									
High clearance	135	133,060	100.48	26.24	—	—	136.71	50.9	2.49
800 gallon 90" 175HP									
High clearance	175	200,800	151.63	38.75	—	—	190.37	65.5	2.91
1000 gallon 120' 250HP200		248,480	187.63	48.24	—	—	235.87	110.0	2.14

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Forage Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Swather (SP) Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
Diesel with 20' header	80	75,150	142.62	26.00	—	—	142.62	8.5	13.26
Swather (pull-type) Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
21' Grain	80	17,720	23.10	10.45	33.63	5.32	38.95	8.9	4.37
25' Grain	80	19,180	23.10	10.45	36.40	5.75	42.15	10.7	3.94
Disk mower Life = 6 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
15' SP Diesel	0	90,750	192.03	38.27	—	—	192.03	6.4	29.85
9'	80	23,050	23.10	10.45	48.77	6.92	72.82	3.9	18.69
12'	100	26,775	30.57	13.66	56.66	15.62	72.28	5.1	14.19
Mower conditioner Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
14' SP Diesel	100	79,933	151.70	29.62	—	—	151.70	5.9	25.70
9' PTO	80	16,300	23.10	10.45	30.93	4.89	35.82	3.9	9.18
12' PTO	100	22,925	30.57	13.66	43.51	14.47	57.98	5.1	12.55
14' PTO	120	26,200	35.48	16.71	49.72	7.86	57.58	5.9	14.51
Rotary mowers Life = 7 Annual hours use = 100 Annual repair rate = 3% Replacement cost									
20' Wing type	150	25,900	40.95	19.17	49.15	7.77	56.92	8.5	13.29
10' Heavy duty	100	11,750	30.57	13.66	22.30	3.53	25.83	4.2	6.15
Rake Life = 15 Annual hours use = 50 Annual repair rate = 2% Replacement cost									
10' Rotary	40	6,500	11.95	5.13	15.86	2.60	18.46	4.2	4.39
Forage harvester Life = 6 Annual hours use = 400 Annual repair rate = 3% Replacement cost Salvage Value = 50% Replacement cost									
SP 450 HP	450	271,000	143.36	51.38	—	—	143.36	8.5	16.76
SP 350 HP	350	242,500	128.28	39.58	—	—	128.28	8.5	15.33
20' Pulltype	150	37,600	40.95	19.17	19.89	2.82	42.76	6.8	6.28
24' Pulltype	240	47,400	45.67	23.85	25.07	3.56	48.23	8.5	11.37
200 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.									
Dump wagon Life = 15 Annual hours use = 200 Annual repair rate = 2% Replacement cost									
Small (700 cu ft)	0	13,500	8.23	1.35	—	—	8.23	8.5	0.97
Medium (900 cu ft)	0	18,500	11.28	1.85	—	—	11.28	8.5	1.34
Large (1200 cu ft)	0	21,000	12.81	2.10	—	—	12.81	8.5	1.53
400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.									

Baling Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost			Twine Cost (\$/bale)	Total Cost (\$/bale)
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Bales/hr)	(\$/bale)		
Balers (standard)	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%		Replacement cost		
Small 14" x 18"	60	22,225	14.99	7.46	42.18	6.67	71.30	200		0.04	0.04
Large 16" x 18"	80	25,300	23.10	10.45	48.01	7.59	89.15	300		0.04	0.04
Large round	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%		Replacement cost		
4' x 6' Bale	80	26,675	23.10	10.45	50.62	8.00	92.18	18		0.40	0.40
5' x 6' Bale	100	32,762	30.57	13.66	62.18	9.83	116.24	16		0.40	0.40
Large square	Life = 10	Annual hours use = 300		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%		Replacement cost		
1500-2000 lb Bale	150	93,866	40.95	19.17	47.25	9.39	116.76	10		0.20	0.20
Bale wagons	Life = 12	Annual hours use = 150		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%		Replacement cost		
SP 160 Bale	80	140,000	127.21	41.32			168.53	400		—	0.00
Pull 104 Bale	120	35,000	35.48	16.71	31.80	7.00	90.99	240		—	0.00

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Forage Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
Swather (SP)	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50% Replacement cost		
Diesel with 20' header	80	75,150	142.62	26.00			168.62	8.5	19.88
Swather (pull-type)	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50% Replacement cost		
21' Grain	80	17,720	23.10	10.45	33.63	5.32	72.50	8.9	8.14
25' Grain	80	19,180	23.10	10.45	36.40	5.75	75.70	10.7	7.10
Disk mower	Life = 6	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50% Replacement cost		
15' SP Diesel	0	90,750	192.03	38.27			230.29	6.4	36.21
9'	80	23,050	23.10	10.45	48.77	6.92	89.24	3.9	22.94
12'	100	26,775	30.57	13.66	56.66	15.62	116.51	5.1	22.89
Mower conditioner	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50% Replacement cost		
14' SP Diesel	100	79,933	151.70	29.62			181.32	5.9	30.68
9' PTO	80	16,300	23.10	10.45	30.93	4.89	69.37	3.9	17.83
12' PTO	100	22,925	30.57	13.66	43.51	14.47	102.21	5.1	20.08
14' PTO	120	26,200	35.48	16.71	49.72	7.86	109.77	5.9	18.51
Rotary mowers	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost			
20' Wing type	150	25,900	40.95	19.17	49.15	7.77	117.04	8.5	13.80
10' Heavy duty	100	11,750	30.57	13.66	22.30	3.53	70.06	4.2	16.52
Rake	Life = 15	Annual hours use = 50		Annual repair rate = 2%		Replacement cost			
10' Rotary	40	6,500	11.95	5.13	15.86	2.60	35.54	4.2	8.38
Forage harvester	Life = 6	Annual hours use = 400		Annual repair rate = 3%		Replacement cost	Salvage Value = 50% Replacement cost		
SP 450 HP	450	271,000	143.36	51.38			194.74	8.5	22.96
SP 350 HP	350	242,500	128.28	39.58			167.86	8.5	19.79
20' Pulltype	150	37,600	40.95	19.17	19.89	2.82	82.83	6.8	12.22
24' Pulltype	240	47,400	45.67	23.85	25.07	3.56	98.15	8.5	11.57
200 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.									
Dump wagon	Life = 15	Annual hours use = 200		Annual repair rate = 2%		Replacement cost			
Small (700 cu ft)	0	13,500	8.23	1.35			9.58	8.5	1.13
Medium (900 cu ft)	0	18,500	11.28	1.85			13.13	8.5	1.55
Large (1200 cu ft)	0	21,000	12.81	2.10			14.91	8.5	1.76
Conveyor type									

Baling Equipment

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost			Twine Cost (\$/bale)	Total Cost (\$/bale)
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Bales/hr)	(\$/bale)		
Balers (standard)	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%			Replacement cost	
Small 14" x 18"	60	22,225	14.99	7.46	42.18	6.67	71.30	200	0.36	0.04	0.40
Large 16" x 18"	80	25,300	23.10	10.45	48.01	7.59	89.15	300	0.30	0.04	0.34
Large round	Life = 7	Annual hours use = 100		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%			Replacement cost	
4' x 6' Bale	80	26,675	23.10	10.45	50.62	8.00	92.18	18	5.12	0.40	5.52
5' x 6' Bale	100	32,762	30.57	13.66	62.18	9.83	116.24	16	7.27	0.40	7.67
Large square	Life = 10	Annual hours use = 300		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%			Replacement cost	
1500-2000 lb Bale	150	93,866	40.95	19.17	47.25	9.39	116.76	10	11.68	0.20	11.88
Bale wagons	Life = 12	Annual hours use = 150		Annual repair rate = 3%		Replacement cost	Salvage Value = 50%			Replacement cost	
SP 160 Bale	80	140,000	127.21	41.32			168.53	400	0.42		0.42
Pull 104 Bale	120	35,000	35.48	16.71	31.80	7.00	90.99	240	0.38		0.38

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Combines

Years life = 7
 Annual use (Hrs) = 100, 200*, 300
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Combine Cylinder Width	Annual Hours Used (hrs)	Current Replacement Cost (\$)	Power unit or SP unit		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
SP Diesel 50 Inch Cylinder (HP = 175)	100		229.41		262.84		40.44
	200	158,500	114.70	33.44	148.14	6.5	22.79
	300		76.47		109.90		16.91
SP Diesel 60 Inch Cylinder (HP = 270)	100		303.95		346.49		40.76
	200	210,000	151.97	42.54	194.51	8.5	22.88
	300		101.32		143.86		16.92
Rotary type (Small) (HP = 175)	100		267.62		307.08		36.13
	200	184,900	133.81	39.47	173.27	8.5	20.39
	300		89.21		128.67		15.14
Rotary type (Medium) (HP = 250)	100		285.04		328.03		34.53
	200	196,933	142.52	42.99	185.51	9.5	19.53
	300		95.01		138.01		14.53
Rotary type (Large) (HP = 300)	100		318.60		368.87		35.13
	200	220,125	159.30	50.27	209.57	10.5	19.96
	300		106.20		156.47		14.90

*This Annual Hours Used figure is typical.

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Grinders, Mixers and Dryers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Tons/hr)	(\$ Tons)
Bale processor	Life = 12		Annual hours use = 80				Annual repair rate = 3% Replacement cost		
Average Capacity	80	11 733	23 10	10 45	19 99	4 40	57.94		
Tub grinder	Life = 12		Annual hours use = 80				Annual repair rate = 3% Replacement cost		
15 Tons/hour	120	14 500	35 48	16 71	24 70	5 44	82.33	15.0	5.49
35 Tons/hour	150	29 500	40 95	19 17	50 26	11 06	121.44	35.0	3.47
40 Tons/hour	180	38 000	47 90	22 97	64 74	14 25	149.86	40.0	3.75
Portable grinder/ Mix	Life = 10		Annual hours use = 80				Annual repair rate = 3% Replacement cost		
24" Screen and bale shredder	100	24 000	30 57	13 66	45 31	9 00	98.54		

Grain Dryers	Life = 12							Moisture Drop	
								20-14% (\$/Tonne)	17.5-14% (\$/Tonne)
Recirculating batch									
500 Bu 30,000 BTU Propane = 114 L/hr	40	29,300	11.95	5.13	19.97	32.77	69.82	11.64 (6.0 T/hr)	7.76 (9.0 T/hr)
Continuous flow									
- small Propane = 110 L/hr	40	45,000	11.95	5.13	30.67	54.25	82.00	18.64 (6.0 T/hr)	8.63 (9.5 T/hr)
- medium Propane = 145 L/hr	40	60,000	11.95	5.13	40.89	45.25	103.22	15.88 (9.0 T/hr)	7.59 (13.6 T/hr)
- large Propane = 180 L/hr	40	80,000	11.95	5.13	54.52	62.00	133.60	10.28 (18.0 T/hr)	4.91 (27.2 T/hr)

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Combines

Years life = 7
 Annual use (Hrs) = 100, 200*, 300
 Annual repair rate = 3% of Replacement cost
 Salvage Value = 50% Replacement cost

Combine Cylinder Width	Annual Hours Used (hrs)	Current Replacement Cost (\$)	Power unit or SP unit		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Acre/hr)	(\$/acre)
SP Diesel 50 Inch Cylinder (HP = 175)	100		229.41			6.5	
	200	158,500	114.70	33.44			
	300		76.47				
SP Diesel 60 Inch Cylinder (HP = 270)	100		303.95			8.5	
	200	210,000	151.97	42.54			
	300		101.32				
Rotary type (Small) (HP=175)	100		267.62			8.5	
	200	184,900	133.81	39.47			
	300		89.21				
Rotary type (Medium) (HP=250)	100		285.04			9.5	
	200	196,933	142.52	42.99			
	300		95.01				
Rotary type (Large) (HP=300)	100		318.60			10.5	
	200	220,125	159.30	50.27			
	300		106.20				

* This Annual Hours Used figure is typical.

** 400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Grinders, Mixers and Dryers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(Tons/hr)	(\$/Tons)
Bale processor	Life = 12		Annual hours use = 80		Annual repair rate = 3%		Replacement cost		
Average Capacity	80	11,733	23.10	10.45	19.99	4.40	27.39		
Tub grinder	Life = 12		Annual hours use = 80		Annual repair rate = 3%		Replacement cost		
15 Tons/hour	120	14,500	35.48	16.71	24.70	5.44	40.14	15.0	2.68
35 Tons/hour	150	29,500	40.95	19.17	50.26	11.06	61.32	35.0	1.75
40 Tons/hour	180	38,000	47.90	22.97	64.74	14.25	78.99	40.0	1.97
Portable grinder/ Mix	Life = 10		Annual hours use = 80		Annual repair rate = 3%		Replacement cost		
24" Screen and bale shredder	100	24,000	30.57	13.66	45.31	9.00	54.31		

Grain Dryers	Life = 12		Annual hours use = 200		Ann. repair rate = 3%		Replacement cost	Moisture Drop	
								20-14% (\$/Tonne)	17.5-14% (\$/Tonne)
Recirculating batch									
500 Bu 30,000 BTU Propane = 114 L/hr	40	29,300	11.95	5.13	19.97	32.77	25.10	11.64 (6.0 T/hr)	7.76 (9.0 T/hr)
Continuous flow									
- small Propane = 110 L/hr	40	45,000	11.95	5.13	30.67	34.25	65.82	18.64 (6.0 T/hr)	8.63 (9.5 T/hr)
- medium Propane = 145 L/hr	40	60,000	11.95	5.13	40.89	45.25	86.12	15.88 (9.0 T/hr)	7.59 (13.6 T/hr)
- large Propane = 180 L/hr	40	80,000	11.95	5.13	54.52	62.00	116.52	10.28 (18.0 T/hr)	4.91 (27.2 T/hr)

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Natural gas drying costs are lower than propane.

Other variables such as relative humidity and air temperature can dramatically affect fuel consumption and throughput.

Years life = 15

Annual use (Hrs) = 50, 150*, 450

Annual repair rate = 3% of Replacement cost

Farm Trucks

Truck Size	Annual Hours Used	Diesel Fuel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (\$/hr)	Total Truck Cost (\$/hr)
General Trucking	50			158.58		
3 ton diesel	150	31.00	65,000	52.86	23.70	
W/box & hoist	450			16.13		
	50			182.98		
4 ton diesel	150	38.00	75,000	60.99	28.11	
W/box & hoist	450			20.33		
	50			226.89		
5 ton diesel	150	43.00	93,000	75.63	29.97	
W/box & hoist	450			25.21		

* This Annual Hours Used figure is typical.

Rock Pickers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(acre/hr)	(\$/acre)
Rock picker	Life = 10		Annual hours use = 150		Annual repair rate = 6% Replacement cost				
Rake - picker combo	80	18,000	23.10	10.45	18.12	7.20			
- reel type	80	17,500	23.10	10.45	17.62	7.00			

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Grain Vacuums

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(bu/hr)	(\$/bu)
Grain vacuums	Life = 15		Annual hours use = 150		Annual repair rate = 3% Replacement cost				
Large	120	14,000	35.48	16.71	11.39	2.80		1800.0	

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.



Farm Trucks

Years life = 15
Annual use (Hrs) = 50, 150*, 450
Annual repair rate = 3% of Replacement cost

Truck Size	Annual Hours Used	Diesel Fuel Use (Litres/hr)	Current Replacement Cost (\$)	Fixed Cost (\$/hr)	Variable Cost (\$/hr)	Total Truck Cost (\$/hr)
General Trucking	50			158.58		182.28
4 ton diesel	150	31.00	65.000	52.86	23.70	76.56
W/box & hoist	450			16.13		41.32
4 ton diesel	50			182.98		211.09
4 ton diesel	150	38.00	75.000	60.99	28.11	89.10
W/box & hoist	450			20.33		48.44
5 ton diesel	50			226.89		260.33
5 ton diesel	150	43.00	93.000	75.63	29.97	109.07
W/box & hoist	450			25.21		58.65

*This Annual Hours Used figure is typical.

Rock Pickers

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(acre/hr)	(\$/acre)
Rock picker	Life = 10		Annual hours use = 150		Annual repair rate = 6% Replacement cost				
Rake - picker combo	80	18.000	23.10	10.45	18.12	7.20	58.87		
- reel type	80	17.500	23.10	10.45	17.62	7.00	58.17		

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Grain Vacuums

Implement	Tractor (HP)	Current Replacement Cost (\$)	Power unit or SP unit		Implement		Total Machine Cost		
			Fixed Cost (\$/hr)	Var Cost (\$/hr)	Fixed Cost (\$/hr)	Var Cost (\$/hr)	(\$/hr)	(bu/hr)	(\$/bu)
Grain vacuums	Life = 15		Annual hours use = 150		Annual repair rate = 3% Replacement cost				
Large	120	14.000	35.48	16.71	11.39	2.80	66.37	1800.0	0.04

400 Annual Hours of Tractor Use figures are used to determine above Power Unit costs.

Calculating Farm Machinery Costs

Preface

The worksheets and tables on the following pages can be used to calculate the costs of operating your own machines. An explanation of the variables is provided on the following page. A sample calculation is done for you on pages 33 through 35 and blank worksheets are provided on pages 36 through 38. Standards for fuel consumption, depreciation annual use, repair rates and field efficiency are given in the tables on pages 39 and 40. **During 1999, we developed an online machinery cost calculator that brings the worksheet on page 34 to life. This calculator is available free of charge to you at www.agric.gov.ab.ca/machcost.**

Online Cost Calculator Instructions

To use the calculator:

Page 1 has 3 pop windows:

1. Power units and self propelled – click on it and scroll down until you find the machine you want and highlight it (e.g. 300hp tractor)
2. Implement 1 – if you selected a tractor in the first window, now select the implement you want to pull (e.g. 40 ft air seeder). If you selected a self-propelled machine, don't go here.
3. Implement 2 – if you aren't pulling two implements, click on this and select the second implement (e.g. harrow packer). If you aren't pulling two implements in tandem, ignore the second implement.
4. After selecting the machine(s) you want, click on the **proceed to calculator** button and page 2 will appear.

Page 2 has the cost information for the specific machine you chose from the data base. All these numbers are soft, so you can override one or all of them and enter your own numbers. To do this, just click on the number you want to change and type in the new number. When you have all the input data modified to your satisfaction, click on **calculate costs**.

Page 3 – the top (Input Parameters) is a summary of your input data. The bottom is the calculated cost result. If you want to change any of the inputs, click on the back button, which will take you back to the second page.

If you have any problems using the calculator, please contact Dann Mattson at (403) 556-4248 or email dann.mattson@agric.gov.ab.ca

If you need further assistance in using this material, contact an Alberta Agriculture, Food and Rural Development Farm Management Specialist at one of the following locations.

Airdrie	(403) 948-8524
Barrhead	(780) 674-8213
Claresholm	(403) 625-1445
Fairview	(780) 835-2241
Leduc	(780) 986-8985
Red Deer	(403) 340-7007
Stettler	(403) 742-7500
Taber	(403) 223-7907
Vegreville	(780) 632-5400

To contact a Farm Management Specialist outside your local calling area, use the RITE system for toll-free long distance service. Just dial 310-0000 and then enter the seven digit number of the office you want or stay on the line to get operator assistance.

Machinery Cost Terms

Record all the information needed to calculate ownership and operating costs on page 34. Items N through Q will require use of the formulas on page 33.

Term	Line	Information Required
Machine description		The machines' make and model.

Data and Assumptions

Today's new price	A	The suggested retail price of the desired machine (new or used).
Planning period	B	The number of years the machine will be owned.
Today's used price	C	The price of a used machine that is similar to the new desired machine and as old as the planning period.
Annual hours of use	D	Total annual use for all operations.
Fuel usage	E	Litres or gallons per hour.
Fuel cost	F	\$ per gallon or litre
Labour cost	G	\$ per hour
Annual repair rate	H	Percentage of new price [refer to table on page 39].
Risk free interest rate	I	The Bank of Canada 90 day T-Bill rate or equivalent.
Risk premium	J	A value estimate which represents the additional risk of the investment over and above the 90 day T-bill rate. [6% is commonly used]
Marginal tax rate	K	The expected marginal tax rate of the farm business during the planning period.
Rate of inflation	L	The current rate of inflation, e.g. the consumer price index.

Formulas

Capital cost allowance Class rate	M	The appropriate tax percentage depreciation rate for the machine. Generally: 30% for tractors, trucks and self-propelled machines; 20% for pull-type equipment.
Real discount rate	N	Interest rate adjusted for expected risk and inflation. [calculated on page 33]
Real discount factor	O	Value used to arrive at the present value (dollar amount) of the future salvage value of the machine. [calculated on page 33]
Capital cost allowance (CCA) Adjustment factor	P	Value used to arrive at the after tax capital outlay as well as adjustment for the after tax salvage value. [calculated on page 33]
Capital recovery factor	Q	Value that recovers that capital value of the machine through time with the specified real return. [calculated on page 33]

Using the Data and Assumptions [items A through M] and the Formula Results [items N through Q], calculate the ownership and operating costs for the machine combination. The summary sheet on page 35 can be used to list and total costs for all field operations and to calculate per acre (bale, bushel, etc.) values.

Worksheet Formulas

N Real Discount Rate

$$= \left[\left(\frac{(1 + I + J)}{1 + L} \right)^{-1} \right] \times (1 - K) = \left[\left(\frac{(1 + .04 + .06)}{1 + .02} \right)^{-1} \right] \times (1 - 0)$$

I = Interest rate
J = Risk premium
K = Marginal tax rate
L = Rate of inflation

= .0784

O Real Discount Factor - Power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B}$$

Implement 1

$$= \frac{1}{(1 + .0784)^{12}} = .4042$$

Implement 2

$$= \frac{1}{(1 + .0784)^{15}} = .3223$$

Implement 2

$$= \frac{1}{(1 + \quad)^{\quad}} = \quad$$

B = Planning period
N = Real discount rate

P CCA Adjustment Factor - Power unit or self-propelled machine

$$= 1 - \left(\frac{M \times K}{M + N} \right)$$

Implement 1

$$= 1 - \left(\frac{.30 \times 0}{.30 + .0784} \right) = 1$$

Implement 2

$$= 1 - \left(\frac{.20 \times 0}{.20 + .0784} \right) = 1$$

Implement 2

$$= 1 - \left(\frac{\quad \times \quad}{\quad + \quad} \right) = \quad$$

K = Marginal tax rate
M = CCA class rate
N = Real discount rate

Q Capital Recovery Factor

$$= \frac{N}{(1 - O)}$$

Implement 1

$$= \frac{.0784}{(1 - .4042)} = .1316$$

Implement 2

$$= \frac{.0784}{(1 - .3223)} = .2433$$

Implement 2

$$= \frac{\quad}{(1 - \quad)} = \quad$$

N = Real discount rate
O = Real discount factor

Machinery Cost Worksheet

Field Operation

Power Unit or self- propelled unit

Implement 1

Implement 2

Total

Machine descriptions:

270 HP

40 ft

4 WD

Air Drill

Data & assumptions

A New price

\$140,000

\$103,000

\$

B Planning period (years)

12 yrs

15 yrs

yrs

C Used price

\$70,000

\$10,300

\$

D Annual hours of use (total use all operations)

400 hrs

150 hrs

hrs

E Fuel usage (litres per hour)

53 l/hr

F Fuel cost (\$ per litre)

\$0.30

G Labor cost (\$ per hour)

\$0

H Annual repair rate (% of new price)

3.0 %

3.0 %

%

I Interest rate (risk free)

4.0 %

J Risk premium

6.0 %

K Marginal tax rate

0 %

L Rate of inflation

2.0 %

M CCA class rate

30 %

20 %

%

Formula results

N Real discount rate

.0784

O Real discount factor

.4042

.3223

P CCA adjustment factor

1

1

Q Capital recovery factor

.1316

.1157

Ownership Costs

1. Capital recovery (\$ per year)

= [(Line A x Line P) - (Line C x Line P x Line O)] x Line Q

\$14,703

\$11,534

\$

2. Insurance and housing (\$ per year)

= Line A x 1%

\$1,400

\$1030

\$

3. Total annual ownership costs

= Line 1 + Line 2

\$16,103

\$12,564

\$

4. Total ownership costs per hour

= Line 3 ÷ Line D

\$40.26

\$147.82

\$

Operating Costs

5. Fuel cost

= Line E x Line F x Line D x (1 - Line K)

\$6,360

6. Lubrication

= Line 5 x 15%

\$954

7. Repairs

= Line A x Line H

\$4,200

\$3,090

\$

8. Labor

= Line D x Line G

\$0

9. Total annual operating costs

= Line 5 + Line 6 + Line 7 + Line 8

\$11,514

\$3,090

\$

10. Total annual operating costs per hour

= Line 9 ÷ Line D

\$28.79

\$36.35

\$

Total Cost

1. Total annual costs

= Line 3 + Line 9

\$27,617

\$15,654

\$

2. Total cost per hour

= Line 4 + Line 10

\$69.04

\$184.17

\$

See online Machinery Cost Calculator at www.agric.gov.ab.ca/machcost

Worksheet Formulas

N

Real Discount Rate

$$= \left[\left(\frac{(1 + I + J)}{1 + L} \right)^{-1} \right] \times (1 - K) = \left[\left(\frac{(1 + \underline{\hspace{1cm}} + \underline{\hspace{1cm}})}{1 + \underline{\hspace{1cm}}} \right)^{-1} \right] \times (1 - \underline{\hspace{1cm}})$$

I = Interest rate
J = Risk premium
K = Marginal tax rate
L = Rate of inflation

=

O

Real Discount Factor - Power unit or self-propelled machine

$$= \frac{1}{(1 + N)^B} = \frac{1}{(1 + \underline{\hspace{1cm}})^{\underline{\hspace{1cm}}}} = \underline{\hspace{1cm}}$$

Implement 1

$$= \frac{1}{(1 + \underline{\hspace{1cm}})^{\underline{\hspace{1cm}}}} = \underline{\hspace{1cm}}$$

Implement 2

$$= \frac{1}{(1 + \underline{\hspace{1cm}})^{\underline{\hspace{1cm}}}} = \underline{\hspace{1cm}}$$

B = Planning period
N = Real discount rate

P

CCA Adjustment Factor - Power unit or self-propelled machine

$$= 1 - \left(\frac{M \times K}{M + N} \right) = 1 - \left(\frac{\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}}{\underline{\hspace{1cm}} + \underline{\hspace{1cm}}} \right) = \underline{\hspace{1cm}}$$

Implement 1

$$= 1 - \left(\frac{\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}}{\underline{\hspace{1cm}} + \underline{\hspace{1cm}}} \right) = \underline{\hspace{1cm}}$$

Implement 2

$$= 1 - \left(\frac{\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}}{\underline{\hspace{1cm}} + \underline{\hspace{1cm}}} \right) = \underline{\hspace{1cm}}$$

K = Marginal tax rate
M = CCA class rate
N = Real discount rate

Q

Capital Recovery Factor

$$= \frac{N}{(1 - O)} = \frac{\underline{\hspace{1cm}}}{(1 - \underline{\hspace{1cm}})} = \underline{\hspace{1cm}}$$

Implement 1

$$= \frac{\underline{\hspace{1cm}}}{(1 - \underline{\hspace{1cm}})} = \underline{\hspace{1cm}}$$

Implement 2

$$= \frac{\underline{\hspace{1cm}}}{(1 - \underline{\hspace{1cm}})} = \underline{\hspace{1cm}}$$

N = Real discount rate
O = Real discount factor

Machinery Cost Worksheet

Field Operation

Power Unit
or self-
propelled
unit

Implement 1

Implement 2

Total

Machine descriptions:

Data & assumptions

A New price	\$	\$	\$
B Planning period (years)	_____ yrs	_____ yrs	_____ yrs
C Used price	\$	\$	\$
D Annual hours of use (total use all operations)	_____ hrs	_____ hrs	_____ hrs
E Fuel usage (litres per hour)	_____ l/hr		
F Fuel cost (\$ per litre)	\$		
G Labor cost (\$ per hour)	\$		
H Annual repair rate (% of new price)	_____ %	_____ %	_____ %
I Interest rate (risk free)	_____ %		
J Risk premium	_____ %		
K Marginal tax rate	_____ %		
L Rate of inflation	_____ %		
M CCA class rate	_____ %	_____ %	_____ %

Formula results

N Real discount rate	_____		
O Real discount factor	_____	_____	_____
P CCA adjustment factor	_____	_____	_____
Q Capital recovery factor	_____	_____	_____

Ownership Costs

1. Capital recovery (\$ per year)			
= [(Line A x Line P) - (Line C x Line P x Line O)] x Line Q	\$	\$	\$
2. Insurance and housing (\$ per year)	= Line A x 1%	\$	\$
3. Total annual ownership costs	= Line 1 + Line 2	\$	\$
4. Total ownership costs per hour	= Line 3 ÷ Line D	\$	\$

Operating Costs

5. Fuel cost	= Line E x Line F x Line D x (1 - Line K)	\$	
6. Lubrication	= Line 5 x 15%	\$	
7. Repairs	= Line A x Line H	\$	\$
8. Labor	= Line D x Line G	\$	
9. Total annual operating costs			
= Line 5 + Line 6 + Line 7 + Line 8	\$	\$	\$
10. Total annual operating costs per hour	= Line 9 ÷ Line D	\$	\$

Total Cost

1. Total annual costs	= Line 3 + Line 9	\$	\$
2. Total cost per hour	= Line 4 + Line 10	\$	\$

Machinery Cost Summary

Machine	Annual Hours	Working Width (ft)	Working speed (mph)	Field Efficiency	Acres per hour	\$ per hour	\$ per hour (power unit & implement)	\$ per acre
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Fuel Consumption for Varying Tractor Horsepower¹

Tractor type and size	Average Drawbar Horsepower ²		Average Fuel Consumption (gallons per hour) ³	
	Diesel tractors	Gasoline tractors	Diesel tractors	Gasoline tractors
Two wheel drive PTO HP				
30 - 39	—	31.5	—	—
40 - 49	—	38.3	—	—
50 - 59	48.2	47.1	10.5	—
60 - 69	56.2	55.2	13.6	—
70 - 79	65.5	64.5	16.4	—
80 - 89	73.5	74.5	17.7	—
90 - 99	84.0	82.0	20.5	—
100 - 119	90.3	—	22.7	—
120 - 139	111.6	—	28.2	—
140 - 159	128.9	—	32.3	—
160 - 179	145.8	—	38.6	—
Over 180	148.9	—	39.1	—
Four wheel drive DBHP				
100 - 149	135.0	—	33.2	—
150 - 174	159.4	—	40.3	—
175 - 199	182.8	—	50.0	—
200 - 224	217.4	—	53.0	—
225 - 249	235.5	—	58.0	—
250 - 274	265.0	—	61.4	—
275 - 299	281.3	—	62.6	—
300 - 349*	305.0	—	66.4	—

This data on fuel consumption for different sizes of tractors was calculated from the Nebraska Tractor Tests Reports. The fuel consumption figures are based on "75% of Pull at Maximum Power." These fuel consumption figures are for tractors under normal load in average field conditions. Fuel use per hour will be affected by:

- load factor (75% is assumed in these estimates)
- engine RPM
- gear
- correct engine tuning

While these figures may be a good indication of fuel use per hour for a machine, fuel consumption per acre will be affected by the Field Efficiency related to each operation. Estimation of total fuel consumption should take this factor into account. Some factors that can significantly affect field efficiency include:

- wheel slippage
- tire pressure
- tractor ballast
- depth of and sharpness of implement
- soil type and condition
- amount of turning required
- implement overlap in each pass
- down time to refill seed and fertilizer boxes

¹ This data was summarized from "Nebraska Tractor Test Summary 1972 through 1981," *The Grain Grower*, Page 762 (UGG), April 1982 and from 1980-1981 Agricultural Yearbook, S.S.A.E, May, 1980, pp 537-545.

² Average Drawbar Horsepower for all tractors in each range.

³ Average fuel consumption for all tractors in each range.

Machinery Costs Assumption Guide

Machinery	Estimated average number of years until a machine depreciates to 10% of original cash cost.	Estimated average annual farm use.	Estimated average annual hours of use.	Estimated annual repairs as a per cent of the original cash cost.	Estimated annual field efficiency.
Tractors	13	400	3%	120%	—
Combines	12	150	3%	60%	60 - 80%
Cultivators	15	250	3 - 8%	120%	70 - 90%
Discers	15	150	3%	120%	70 - 90%
Rodweeder	15	100	2%	100%	70 - 90%
Seed drills	15	100	2%	100%	65 - 80%
Harrows, packers	15	40	2%	120%	70 - 90%
Sprayers	15	50	2%	80%	50 - 80%
Stone pickers	15	40	2%	100%	50 - 80%
Swathers	15	100	3%	95%	70 - 85%
Mowers & rakes	15	50	2%	100%	60 - 90%
Mower-conditioner	15	50	2%	100%	60 - 85%
Forage harvester	15	80	3%	80%	50 - 80%
Standard balers	10	80	3%	80%	60 - 85%
Large round balers	12	60	2%	60%	60 - 85%
Grain dryers	12	200	3%	—	—
Loaders	15	40	2%	90%	—

¹ Estimated average number of years until a machine depreciates to 10% of original cash cost.

² Estimated average annual farm use.

³ Estimates are based on average conditions and the indicated annual hours of use. Repair rates may be higher for older machines, more hours of annual use or more difficult working conditions.

⁴ Total repairs as a per cent of the original cash cost. Repairs are usually low in the first years before they begin to increase at an increasing rate as the machine wears out. These figures could be viewed as a maximum since they reflect high rates in later years.

⁵ Field efficiency is a percentage estimate of the amount of time machinery is actually in use relative to the total time required to complete an operation (refer also to page 39).

Acres Per Hour

Acres per hour or, "effective field capacity" can be calculated using the following formula:

Acres per hour (effective field capacity)

$$= \frac{\text{machine width (ft)} \times \text{speed (mph)} \times \text{field efficiency}}{8.25}$$

e.g., A thirty-one foot cultivator travelling at 5 mph operating at 80% field efficiency would have an effective field capacity of:

Acres per hour

$$= \frac{31 \times 5 \times .80}{8.25} = 15 \text{ ac/hr}$$

Power Required for Tillage

Machine	(H.P./Ft. width)		(H.P. P.T.O.)	
	H.P. Drawbar		Light	
	2" (5 mph)	5" (5 mph)	Light (6.2 mph)	Heavy (6.2 mph)
Chisel Plow	1.5	3.4	5.0	6.0
Field Cult	.7	1.8 (4")	3.4	5.0
Tandem Disc	1.6	5.0	5.1	7.5
Blade Cult	2.6	4.5	4.8 (5 mph)	

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ISSN 1201-9313
Printed in Canada